

Ocean's riches lure deep-sea miners, but scientists urge caution

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Coral reefs grow in the waters of Tatawa Besar, Komodo, Indonesia, April 30, 2015. Rising demand for copper, cobalt, gold and rare-earth elements vital in manufacturing smartphones and other high-tech products is causing a prospecting rush to the dark seafloor thousands of feet beneath the waves. Photo: AP/Dita Alangkara, File

KINGSTON, Jamaica — The deep oceans cover more than half the globe. Their frigid depths have long been known to contain vast, untapped deposits of prized minerals. These treasures, however, have always been out of reach to miners.

But now, the era of deep seabed mining appears to be dawning. It is made possible by technological advances in robotics and is necessary because of diminishing natural resources on land.

There is growing demand for copper, cobalt, gold and other elements that are vital to making smartphones and other high-tech products. And that is causing a rush to explore the dark seafloor thousands of feet beneath the waves.

Conservationists Warn Of Risks To Ocean

The International Seabed Authority (ISA), which is based in Jamaica, has been issuing exploration contracts. This has alarmed conservationists, who warn that the deep ocean's fragile biodiversity must be protected. They also say that not nearly enough is known about the risks of extracting minerals from seabeds.

"The pace of activity has increased dramatically over the last five years," said ISA's Michael Lodge. The group is a little-known branch of the United Nations (U.N.) that acts as the global "administrator" of the deep seafloor. The group is also responsible for regulating this new mining frontier.

The U.N. agency oversees seabeds outside of a country's own waters. So far, it has issued 27 exploration contracts, mostly since 2011. The 15-year contracts permit mineral exploration in the Pacific, Atlantic and Indian Oceans.

Robots Would Collect Minerals

Governments and private companies have been moving quickly to get in on the exploration. Some experts predict commercial deep-sea mining could start within the next five years. The process utilizes robots equipped with cameras and sonar sensors. The robots collect the crushed minerals and send them through pipes up to ships.

During a recent meeting in Jamaica, ISA started making plans to oversee the commercial exploration of the seafloor. This would allow governments and companies — not private citizens — to start looking for valuable metals and minerals under the sea.

Last month, a group of international scientists urged ISA to temporarily stop giving out new mining contracts. The group said it first wants to establish "marine protected areas" around areas that are targeted for mining.

"We owe it to future generations to ensure that we think before we act," said Matthew Gianni, co-founder of the Deep Sea Conservation Coalition. Before any mining is permitted, Gianni said, experts need to really understand how it will affect the environment.

China Has The Most Permits

But despite the warnings, in recent days ISA authorized its latest exploration contract. A permit was issued in the Pacific to a company called China Minmetals. China now has the most permits from ISA, with four.

ISA was launched in 1994 and operates under an international agreement called the U.N. Convention on the Law of the Sea. The only major marine power that has not approved the agreement is the United States, where lawmakers have argued it could interfere with the country's economic and military independence.

The U.S. government has granted exploration licenses in the Pacific to Lockheed Martin Corp. The military technology company has also partnered with the United Kingdom by setting up a deep-sea mining branch there.

So far, most of ISA's contracts have been issued for a sprawling area of the Pacific Ocean off Mexico and the United States. The area is known to be rich in copper, cobalt, manganese and significant concentrations of other rare elements. As part of an environmental plan, ISA has set aside nine areas in this zone, prohibiting contractors from touching them.

Seabed Deposits Richer Than On Land

Other areas that scientists want to explore are found in the Western Pacific, Atlantic and Indian Oceans. ISA estimates that one site could provide up to 25 percent of the yearly need for cobalt, a metal.

"The concentrations of minerals that you find in the seabed are very much richer than what's left on land," ISA's Lodge said. "So demand is only going to increase."

Douglas McCauley is an ecologist and conservation biologist at the University of California, Santa Barbara. He believes mankind is nearing a revolution in undersea exploration and industry, and he's worried about its effect.

"(It looks) uncomfortably similar to what we did to land in the 1700s and 1800s," McCauley said. He added that the beginning of industrialization on land was associated with a rise in animal extinctions.

But there are basic things humanity can do to approach seabed mining intelligently, he said. First, learn what biodiversity is down there before we mine. Second, go slowly on exploitation contracts and study the effects of mining as it is happening. Third, set up systems of protected areas before, not after, mining starts.

"You can't really blame people in the 1700s for the damage they did to the environment," McCauley said. "But we certainly are to blame if we don't do seabed mining properly."

Quiz

- 1 Which of the following represent two central ideas of the article?
- 1. The ocean floor contains numerous valuable minerals.*
 - 2. The International Seabed Authority is the organization responsible for giving out undersea exploration permits.*
 - 3. In the 1700s and 1800s, miners did extensive damage to the land and local animals.*
 - 4. Conservationists are concerned that undersea mining could damage the ocean floor.*
- (A) 1 and 2
- (B) 2 and 3
- (C) 3 and 4
- (D) 1 and 4
- 2 Which of the following would make the BEST summary of the article?
- (A) Governments and private companies have been moving quickly to gain access to the sea floor for mining purposes. However, the International Seabed Authority has placed strict limits on the abilities of organizations to actually engage in mining activities on the ocean floor.
- (B) The growing demand for elements that comprise our modern technology has led to more interest in deep-sea mining. The International Seabed Authority has begun to issue more contracts for exploration, but conservationists worry that this could have damaging effects on the ocean.
- (C) The International Seabed Authority, which is based in Jamaica, has been issuing exploration contracts to various companies and governments in order to allow them to begin exploration for deep-sea mining. This has led to a scramble among various groups to gain the greatest access to the sea floor.
- (D) Conservationists, in an effort to protect the ocean from the ravages of deep sea mining, have begun to voice concerns about potentially harmful effects. However, these concerns have fallen on deaf ears at the offices of the International Seabed Authority, which has done little to protect the ocean from hasty deep-sea miners/

- 3 Which answer choice BEST describes the perspective of the United States on ocean protection?
- (A) The United States has shown a deep interest in conserving the ocean, as evidenced by its granting multiple exploration licenses.
 - (B) The United States has shown a moderate interest in engaging in global conservation efforts, as evidenced by its use of Lockheed Martin Corp., a military company.
 - (C) The United States has shown little interest in protecting the ocean, as evidenced by the large number of contracts that have been issued for areas close to the United States.
 - (D) The United States has shown more interest in its own independence than in conservation, as evidenced by its failure to join the International Seabed Authority.
- 4 Which of the following does McCauley NOT describe as a way that he believes we could protect the oceans?
- (A) study the undersea life in potential mining areas
 - (B) study the effects of mining as they occur
 - (C) prohibit mining in areas where endangered animals live
 - (D) designate certain areas as protected prior to the start of mining expeditions